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# **ANALYTICAL REPORT**

Job Number: 360-31098-1

Job Description: Olin Chemical Annual Sediment

For:

Olin Corporation 3855 North Ocoee Street Suite 200 Cleveland, TN 37312-4441

Attention: Mr. Steven Morrow

CHECKED FOR COMPLETENESS OF PARAMETERS ORDERED BY:

Joseph a. Cheur J.

Approved for release.
Joe Chimi
Report Production Representative
11/18/10 10:14 AM

Designee for
Becky C Mason
Project Manager II
becky.mason@testamericainc.com
11/18/2010

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. TestAmerica Westfield Certifications and Approvals: MADEP MA014, RIDOH57, CTDPH 0494, VT DECWSD, NH DES 2539, NELAP FL E87912 TOX, NELAP NJ MA008 TOX, NELAP NY 10843, NY ELAP 10843, North Carolina 647, NELAP PA 68-04386. Field sampling is performed under SOPs WE-FLD-001 and WE-FLD-002.



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	MassDEP Analytical Protocol Certification Form								
Labor	aboratory Name: TestAmerica Westfield Project #: 360-31098-1								
Project Location: RTN:									
This f	Fhis form provides certifications for the following data set: list Laboratory Sample ID Number(s)):								
360-3	360-31098-(1-6)								
Matric	es:	Groundwater/Surfa	ce Water	X	Soil/Sediment		Drinking Water Air	Oth	ner:
		check all that ap							
8260	_	7470/7471 Hg	Mass DEP VF	H	8081 Pesticides		7196 Hex Cr	Mass DEF	
CAM   8270 :		7010 Metals	CAM IV A Mass DEP EF		CAM V B 4 8151 Herbicides		CAM VI B 8330 Explosives	CAM IX A TO-15 VO	
CAM I		CAM III C	CAM IV B		CAM V C		CAM VIII A	CAM IX B	
					9014 Total				
6010   CAM	Metals	6020 Metals CAM III D	8082 PCB CAM V A		Cyanide/PAC CAM VI A		332.0 Perchlorate CAM VIII B		
CAIVI				<u> </u>		<u> </u>		<u> </u>	
					-		Presumptive Certainty" st	atus I	
Α							d on the Chain-of-Custody, prepared/analyzed within		
	method hold	` `	iiperature) iir ti	ie iie	id of laboratory, a	Hu	prepared/analyzed within	X Yes	☐ No
В	Were the and protocol(s) for	•	nd all associate	ed Q	C requirements sp	ec	cified in the selected CAM	XYes	☐ No
С		uired corrective acti					cified in the selected CAM formances?	X Yes	□ No
	. ,	•	·				ecified in CAM VII A,		
D			•	-	•	•	d Reporting of Analytical	X Yes	☐ No
_		and APH Methods	•				_	Yes	☐ No
E	· ·	s)? (Refer to the inc FO-15 Methods only		٠,,	_		•	Yes	☐ No
F	Were all app	licable CAM protoc	ol QC and perf	orma	nce standard non-	-cc	onformances identified and tions A through E)?	X Yes	□ No
					<u> </u>		sumptive Certainty" status		
G	Were the repprotocol(s)?	porting limits at or be	elow all CAM re	eporti	ing limits specified	l in	the selected CAM	X	□ No¹
			<u>-</u>	-			essarily meet the data usabi	lity and	
repres H		requirements descr							X No
'''		performance stand	•					Yes	
1 All p		reported for the consess must be address.			•		ted CAM protocol(s) ?	∐ Yes	X No
					•		on my personal inquiry of th	nose resnon	sible for
obtain		nation, the material o					ne best of my knowledge and		isible for
Signa	ture:	State	entura		Positio	n:	Laboratory D	irector	
Printe	d Name:	Steven C.	Hartmann		Date	e:	11/18/10 1	0:10	
This forn	n has been electron	nically signed and approved							

#### **CASE NARRATIVE**

**Client: Olin Corporation** 

**Project: Olin Chemical Annual Sediment** 

Report Number: 360-31098-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

#### RECEIPT

The samples were received on 11/15/2010; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.6 C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2 C of the required temperature or method specified range. For samples with a specified temperature of 4 C, samples with a temperature ranging from just above freezing temperature of water to 6 C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

#### **TOTAL METALS (ICP)**

Samples OC-SD-SD1-0.0/0.5 (360-31098-1), OC-SD-SD2-0.0/0.5 (360-31098-2), OC-SD-SD3-0.0/0.5 (360-31098-3), OC-SD-SD4-0.0/0.5 (360-31098-4), OC-SD-SD5-0.0/0.5 (360-31098-5) and OC-SD-SD2-0.0/0.5 DUP (360-31098-6) were analyzed for total metals (ICP) in accordance with EPA SW-846 Method 6010B. The samples were prepared and analyzed on 11/17/2010.

Aluminum failed the recovery criteria low for the post digestion spike of sample OC-SD-SD2-0.0/0.5 (360-31098-2). Iron failed the recovery criteria low for the MS of sample OC-SD-SD2-0.0/0.5MS (360-31098-2) in batch 360-65997. Aluminum and Chromium failed the recovery criteria high. Iron failed the recovery criteria low for the MSD of sample OC-SD-SD2-0.0/0.5 (360-31098-2) in batch 360-65997. Aluminum failed the recovery criteria high. The presence of the '4' qualifier in the report indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount. The associated LCS and LCSD recovered within control limits. Refer to the QC report for details.

Iron was detected in method blank MB 360-65955/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "J". If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged. Refer to the QC report for details.

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No other difficulties were encountered during the metals analyses.

All other quality control parameters were within the acceptance limits.

#### **PERCENT SOLIDS**

Samples OC-SD-SD1-0.0/0.5 (360-31098-1), OC-SD-SD2-0.0/0.5 (360-31098-2), OC-SD-SD3-0.0/0.5 (360-31098-3), OC-SD-SD4-0.0/0.5 (360-31098-4), OC-SD-SD5-0.0/0.5 (360-31098-5) and OC-SD-SD2-0.0/0.5 DUP (360-31098-6) were analyzed for percent solids in accordance with EPA Moisture. The samples were analyzed on 11/16/2010.

No difficulties were encountered during the % solids analyses.

All quality control parameters were within the acceptance limits.

## **EXECUTIVE SUMMARY - Detections**

Client: Olin Corporation Job Number: 360-31098-1

Lab Sample ID Analyte	Client Sample ID	Result / Qu	ualifier	Reporting Limit	Units	Method	
360-31098-1	OC-SD-SD1-0.0/0.5						
Aluminum		9300		3.5	mg/Kg	6010B	
Chromium		21 11000	ь	0.69	mg/Kg	6010B	
Iron Percent Moisture		28	В	6.9 1.0	mg/Kg %	6010B Moisture	
Percent Solids		72		1.0	%	Moisture	
360-31098-2	OC-SD-SD2-0.0/0.5						
Aluminum		3900		4.4	mg/Kg	6010B	
Chromium		260		0.88	mg/Kg	6010B	
Iron		12000	В	8.8	mg/Kg	6010B	
Percent Moisture		30		1.0	%	Moisture	
Percent Solids		70		1.0	%	Moisture	
360-31098-3	OC-SD-SD3-0.0/0.5						
Aluminum		8200		3.9	mg/Kg	6010B	
Chromium		20		0.78	mg/Kg	6010B	
Iron		9600	В	7.8	mg/Kg	6010B	
Percent Moisture		22		1.0	%	Moisture	
Percent Solids		78		1.0	%	Moisture	
360-31098-4	OC-SD-SD4-0.0/0.5						
Aluminum		9700		4.1	mg/Kg	6010B	
Chromium		23		0.82	mg/Kg	6010B	
Iron		14000	В	8.2	mg/Kg	6010B	
Percent Moisture		26		1.0	%	Moisture	
Percent Solids		74		1.0	%	Moisture	
360-31098-5	OC-SD-SD5-0.0/0.5						
Aluminum		16000		5.2	mg/Kg	6010B	
Chromium		1800		1.0	mg/Kg	6010B	
Iron		16000	В	10	mg/Kg	6010B	
Percent Moisture		42		1.0	%	Moisture	
Percent Solids		58		1.0	%	Moisture	

## **EXECUTIVE SUMMARY - Detections**

Client: Olin Corporation Job Number: 360-31098-1

Lab Sample ID Analyte	Client Sample ID	Result / Q	ualifiar	Reporting Limit	Units	Method	
Analyte		Result / Q	uaiiiiei	Lillit	Units	wethou	
360-31098-6	OC-SD-SD2-0.0/0.5 DUP						
Aluminum		3100		3.6	mg/Kg	6010B	
Chromium		110		0.73	mg/Kg	6010B	
Iron		8100	В	7.3	mg/Kg	6010B	
Percent Moisture		25		1.0	%	Moisture	
Percent Solids		75		1.0	%	Moisture	

#### **METHOD SUMMARY**

Client: Olin Corporation Job Number: 360-31098-1

Description	Lab Location	Method	Preparation Method
Matrix Solid			
Metals (ICP)	TAL WFD	SW846 6010B	
Preparation, Metals	TAL WFD		SW846 3050B
Percent Moisture	TAL WFD	EPA Moisture	

#### Lab References:

TAL WFD = TestAmerica Westfield

#### **Method References:**

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

# METHOD / ANALYST SUMMARY

Client: Olin Corporation Job Number: 360-31098-1

Method	Analyst	Analyst ID
SW846 6010B	Smith, Tim J	TJS
EPA Moisture	Nasiatka, Ellen M	EMN

## **SAMPLE SUMMARY**

Client: Olin Corporation Job Number: 360-31098-1

			Date/Time	Date/Time
Lab Sample ID	ple ID Client Sample ID Client Matrix		Sampled	Received
360-31098-1	OC-SD-SD1-0.0/0.5	Solid	11/15/2010 1200	11/15/2010 1730
360-31098-2	OC-SD-SD2-0.0/0.5	Solid	11/15/2010 1140	11/15/2010 1730
360-31098-2MS	OC-SD-SD2-0.0/0.5 MS	Solid	11/15/2010 1140	11/15/2010 1730
360-31098-2MSD	OC-SD-SD2-0.0/0.5 MSD	Solid	11/15/2010 1140	11/15/2010 1730
360-31098-3	OC-SD-SD3-0.0/0.5	Solid	11/15/2010 1130	11/15/2010 1730
360-31098-4	OC-SD-SD4-0.0/0.5	Solid	11/15/2010 1100	11/15/2010 1730
360-31098-5	OC-SD-SD5-0.0/0.5	Solid	11/15/2010 1120	11/15/2010 1730
360-31098-6	OC-SD-SD2-0.0/0.5 DUP	Solid	11/15/2010 1140	11/15/2010 1730

# **SAMPLE RESULTS**

Client: Olin Corporation Job Number: 360-31098-1

Client Sample ID: OC-SD-SD1-0.0/0.5

Lab Sample ID: 360-31098-1 Date Sampled: 11/15/2010 1200

Client Matrix: Solid % Moisture: 28.5 Date Received: 11/15/2010 1730

6010B Metals (ICP)

Method:6010BAnalysis Batch: 360-65997Instrument ID:Varian ICPPreparation:3050BPrep Batch: 360-65955Lab File ID:111710c.csv

Dilution: 1.0 Initial Weight/Volume: 2.02 g
Date Analyzed: 11/17/2010 1914 Final Weight/Volume: 100 mL

Date Analyzed: 11/17/2010 1914 Final Weight/Volume: Date Prepared: 11/17/2010 0920

Analyte DryWt Corrected: Y Result (mg/Kg) Qualifier MDL RL 9300 3.5 Aluminum 1.5 Chromium 21 0.35 0.69 Iron 11000 В 1.3 6.9

Client: Olin Corporation Job Number: 360-31098-1

Client Sample ID: OC-SD-SD2-0.0/0.5

Lab Sample ID: 360-31098-2 Date Sampled: 11/15/2010 1140

Client Matrix: Solid % Moisture: 30.0 Date Received: 11/15/2010 1730

6010B Metals (ICP)

Method:6010BAnalysis Batch: 360-65997Instrument ID:Varian ICPPreparation:3050BPrep Batch: 360-65955Lab File ID:111710c.csv

Dilution: 1.0 Initial Weight/Volume: 1.63 g

Date Analyzed: 11/17/2010 1841 Final Weight/Volume: 100 mL Date Prepared: 11/17/2010 0920

Analyte DryWt Corrected: Y Result (mg/Kg) Qualifier MDL RL 4.4 Aluminum 3900 1.9 Chromium 260 0.44 0.88 Iron 12000 В 1.6 8.8

0.78

7.8

Client: Olin Corporation Job Number: 360-31098-1

Client Sample ID: OC-SD-SD3-0.0/0.5

Chromium

Iron

Lab Sample ID: 360-31098-3 Date Sampled: 11/15/2010 1130

Client Matrix: Solid % Moisture: 21.9 Date Received: 11/15/2010 1730

6010B Metals (ICP)

Method:6010BAnalysis Batch: 360-65997Instrument ID:Varian ICPPreparation:3050BPrep Batch: 360-65955Lab File ID:111710c.csv

Dilution: 1.0 Initial Weight/Volume: 1.65 g

Date Analyzed: 11/17/2010 1921 Final Weight/Volume: 100 mL
Date Prepared: 11/17/2010 0920

20

9600

 Analyte
 DryWt Corrected: Y
 Result (mg/Kg)
 Qualifier
 MDL
 RL

 Aluminum
 8200
 1.7
 3.9

В

0.39

1.5

Client: Olin Corporation Job Number: 360-31098-1

Client Sample ID: OC-SD-SD4-0.0/0.5

Lab Sample ID: 360-31098-4 Date Sampled: 11/15/2010 1100

Client Matrix: Solid % Moisture: 26.2 Date Received: 11/15/2010 1730

6010B Metals (ICP)

Method:6010BAnalysis Batch: 360-65997Instrument ID:Varian ICPPreparation:3050BPrep Batch: 360-65955Lab File ID:111710c.csv

Dilution: 1.0 Initial Weight/Volume: 1.65 g

Date Analyzed: 11/17/2010 1927 Final Weight/Volume: 100 mL Date Prepared: 11/17/2010 0920

Analyte DryWt Corrected: Y Result (mg/Kg) Qualifier MDL RL Aluminum 9700 4.1 1.8 Chromium 23 0.41 0.82 Iron 14000 В 1.5 8.2

1.0

10

Client: Olin Corporation Job Number: 360-31098-1

Client Sample ID: OC-SD-SD5-0.0/0.5

Chromium

Iron

Lab Sample ID: 360-31098-5 Date Sampled: 11/15/2010 1120

Client Matrix: Solid % Moisture: 41.7 Date Received: 11/15/2010 1730

6010B Metals (ICP)

Method:6010BAnalysis Batch: 360-65997Instrument ID:Varian ICPPreparation:3050BPrep Batch: 360-65955Lab File ID:111710c.csv

Dilution: 1.0 Initial Weight/Volume: 1.64 g

Date Analyzed: 11/17/2010 1934 Final Weight/Volume: 100 mL Date Prepared: 11/17/2010 0920

1800

16000

Analyte DryWt Corrected: Y Result (mg/Kg) Qualifier MDL RL
Aluminum 16000 2.3 5.2

В

0.52

2.0

Client: Olin Corporation Job Number: 360-31098-1

Client Sample ID: OC-SD-SD2-0.0/0.5 DUP

Lab Sample ID: 360-31098-6 Date Sampled: 11/15/2010 1140

Client Matrix: Solid % Moisture: 25.0 Date Received: 11/15/2010 1730

6010B Metals (ICP)

Method:6010BAnalysis Batch: 360-65997Instrument ID:Varian ICPPreparation:3050BPrep Batch: 360-65955Lab File ID:111710c.csv

Dilution: 1.0 Initial Weight/Volume: 1.83 g

Date Analyzed: 11/17/2010 1954 Final Weight/Volume: 100 mL Date Prepared: 11/17/2010 0920

Analyte DryWt Corrected: Y Result (mg/Kg) Qualifier MDL RL 3.6 Aluminum 3100 1.6 Chromium 110 0.36 0.73 Iron 8100 В 1.4 7.3

**General Chemistry** 

Client Sample ID: OC-SD-SD1-0.0/0.5

Lab Sample ID: 360-31098-1 Date Sampled: 11/15/2010 1200

Client Matrix: Solid Date Received: 11/15/2010 1730

RL Analyte Result  $\mathsf{RL}$ Dil Method Qual Units Percent Moisture 28 % 1.0 1.0 1.0 Moisture Date Analyzed: 11/16/2010 1214 Analysis Batch: 360-65917 DryWt Corrected: N Percent Solids % 72 1.0 1.0 1.0 Moisture Analysis Batch: 360-65917 Date Analyzed: 11/16/2010 1214 DryWt Corrected: N

**General Chemistry** 

Client Sample ID: OC-SD-SD2-0.0/0.5

Lab Sample ID: 360-31098-2 Date Sampled: 11/15/2010 1140

Client Matrix: Solid Date Received: 11/15/2010 1730

RL Analyte Result  $\mathsf{RL}$ Dil Method Qual Units Percent Moisture 30 % 1.0 1.0 1.0 Moisture Date Analyzed: 11/16/2010 1214 Analysis Batch: 360-65917 DryWt Corrected: N Percent Solids % 70 1.0 1.0 1.0 Moisture Analysis Batch: 360-65917 Date Analyzed: 11/16/2010 1214 DryWt Corrected: N

**General Chemistry** 

Client Sample ID: OC-SD-SD3-0.0/0.5

Lab Sample ID: 360-31098-3 Date Sampled: 11/15/2010 1130

Client Matrix: Solid Date Received: 11/15/2010 1730

RL Analyte Result  $\mathsf{RL}$ Dil Method Qual Units Percent Moisture 22 % 1.0 1.0 1.0 Moisture Date Analyzed: 11/16/2010 1214 Analysis Batch: 360-65917 DryWt Corrected: N Percent Solids % 78 1.0 1.0 1.0 Moisture Analysis Batch: 360-65917 Date Analyzed: 11/16/2010 1214 DryWt Corrected: N

**General Chemistry** 

Client Sample ID: OC-SD-SD4-0.0/0.5

Lab Sample ID: 360-31098-4 Date Sampled: 11/15/2010 1100

Client Matrix: Solid Date Received: 11/15/2010 1730

RL Analyte Result  $\mathsf{RL}$ Dil Method Qual Units Percent Moisture 26 % 1.0 1.0 1.0 Moisture Date Analyzed: 11/16/2010 1214 Analysis Batch: 360-65917 DryWt Corrected: N Percent Solids % 74 1.0 1.0 1.0 Moisture Analysis Batch: 360-65917 Date Analyzed: 11/16/2010 1214 DryWt Corrected: N

**General Chemistry** 

Client Sample ID: OC-SD-SD5-0.0/0.5

Lab Sample ID: 360-31098-5 Date Sampled: 11/15/2010 1120

Client Matrix: Solid Date Received: 11/15/2010 1730

RL Analyte  $\mathsf{RL}$ Dil Method Result Qual Units Percent Moisture 42 % 1.0 1.0 1.0 Moisture Date Analyzed: 11/16/2010 1214 Analysis Batch: 360-65917 DryWt Corrected: N Percent Solids % 1.0 1.0 1.0 Moisture Analysis Batch: 360-65917 Date Analyzed: 11/16/2010 1214 DryWt Corrected: N

**General Chemistry** 

Client Sample ID: OC-SD-SD2-0.0/0.5 DUP

Lab Sample ID: 360-31098-6 Date Sampled: 11/15/2010 1140

Client Matrix: Solid Date Received: 11/15/2010 1730

RL Analyte Result  $\mathsf{RL}$ Dil Method Qual Units Percent Moisture 25 % 1.0 1.0 1.0 Moisture Date Analyzed: 11/16/2010 1214 Analysis Batch: 360-65917 DryWt Corrected: N Percent Solids % 75 1.0 1.0 1.0 Moisture Analysis Batch: 360-65917 Date Analyzed: 11/16/2010 1214 DryWt Corrected: N

# **DATA REPORTING QUALIFIERS**

Client: Olin Corporation Job Number: 360-31098-1

Lab Section	Qualifier	Description
Metals		
	В	Compound was found in the blank and sample.
	F	MS or MSD exceeds the control limits
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
	W	PS: Post-digestion spike was outside control limits
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

# **QUALITY CONTROL RESULTS**

#### **QC Association Summary**

Report **Basis** Lab Sample ID Client Sample ID **Client Matrix** Method Prep Batch Metals Prep Batch: 360-65955 3050B LCSSRM 360-65955/2-A LCS-Certified Reference Material Τ Solid LCDSRM 360-65955/3-A LCSD - Standard Reference Material Τ Solid 3050B MB 360-65955/1-A Method Blank Τ Solid 3050B 360-31098-1 OC-SD-SD1-0.0/0.5 Τ Solid 3050B 360-31098-2 OC-SD-SD2-0.0/0.5 Т Solid 3050B Т Solid 3050B 360-31098-2MS Matrix Spike Т 360-31098-2MSD Matrix Spike Duplicate Solid 3050B 360-31098-2PDS Post Digestion Spike Τ Solid 3050B 360-31098-2SD Serial Dilution Т Solid 3050B 360-31098-3 OC-SD-SD3-0.0/0.5 Т Solid 3050B 360-31098-4 OC-SD-SD4-0.0/0.5 Т Solid 3050B 360-31098-5 OC-SD-SD5-0.0/0.5 Τ Solid 3050B 360-31098-6 Т 3050B OC-SD-SD2-0.0/0.5 DUP Solid Analysis Batch:360-65997 Т LCSSRM 360-65955/2-A LCS-Certified Reference Material Solid 6010B 360-65955 LCDSRM 360-65955/3-A LCSD - Standard Reference Material Т Solid 6010B 360-65955 MB 360-65955/1-A Method Blank Т Solid 6010B 360-65955 360-31098-1 OC-SD-SD1-0.0/0.5 Т Solid 6010B 360-65955 360-31098-2 OC-SD-SD2-0.0/0.5 Т Solid 6010B 360-65955 Т 360-31098-2MS Matrix Spike Solid 6010B 360-65955 Т 360-31098-2MSD Matrix Spike Duplicate Solid 6010B 360-65955 Т 360-31098-2PDS Post Digestion Spike Solid 6010B 360-65955 360-31098-2SD Serial Dilution Т Solid 6010B 360-65955 Т 360-31098-3 OC-SD-SD3-0.0/0.5 Solid 6010B 360-65955 Т Solid 360-31098-4 OC-SD-SD4-0.0/0.5 6010B 360-65955 Т Solid 6010B 360-31098-5 OC-SD-SD5-0.0/0.5 360-65955 360-31098-6 OC-SD-SD2-0.0/0.5 DUP Τ Solid 6010B 360-65955

#### Report Basis

T = Total

Client: Olin Corporation Job Number: 360-31098-1

#### **QC Association Summary**

Report Basis Lab Sample ID **Client Matrix** Client Sample ID Method Prep Batch **General Chemistry** Analysis Batch:360-65917 360-31098-1 OC-SD-SD1-0.0/0.5 Τ Solid Moisture Т 360-31098-2 OC-SD-SD2-0.0/0.5 Solid Moisture Т 360-31098-2MS Moisture Matrix Spike Solid Т 360-31098-2MSD Matrix Spike Duplicate Solid Moisture 360-31098-3 OC-SD-SD3-0.0/0.5 Т Solid Moisture Т 360-31098-4 OC-SD-SD4-0.0/0.5 Solid Moisture Т 360-31098-5 OC-SD-SD5-0.0/0.5 Solid Moisture Т 360-31098-6 OC-SD-SD2-0.0/0.5 DUP Solid Moisture

Report Basis

T = Total

Client: Olin Corporation Job Number: 360-31098-1

Method Blank - Batch: 360-65955 Method: 6010B Preparation: 3050B

Lab Sample ID:MB 360-65955/1-AAnalysis Batch:360-65997Instrument ID:Varian ICPClient Matrix:SolidPrep Batch:360-65955Lab File ID:111710c.csvDilution:1.0Units:mg/KgInitial Weight/Volume:2.00 g

Date Analyzed: 11/17/2010 1808 Final Weight/Volume: 100 mL

Date Prepared: 11/17/2010 0920

Analyte	Result	Qual	MDL	RL
Aluminum	ND		1.1	2.5
Chromium	ND		0.25	0.50
Iron	2.38	J	0.94	5.0

LCS-Certified Reference Material/
LCSD - Standard Reference Material Recovery Report - Batch:

Method: 6010B
Preparation: 3050B

LCS Lab Sample ID:LCSSRM 360-65955/2-AAnalysis Batch:360-65997Instrument ID:Varian ICPClient Matrix:SolidPrep Batch:360-65955Lab File ID:111710c.csvDilution:1.0Units:mg/KgInitial Weight/Volume:1.02 g

Dilution: 1.0 Units: mg/kg Initial Weight/Volume: 1.02 g

Date Analyzed: 11/17/2010 1814 Final Weight/Volume: 100 mL

Date Prepared: 11/17/2010 0920

LCSD Lab Sample ID: LCDSRM 360-65955/3-A Analysis Batch: 360-65997 Instrument ID: Varian ICP Client Matrix: Solid Prep Batch: 360-65955 Lab File ID: 111710c.csv

Client Matrix: Solid Prep Batch: 360-65955 Lab File ID: 111710c.csv

Dilution: 1.0 Units: mg/Kg Initial Weight/Volume: 1.01 g

Date Analyzed: 11/17/2010 1834 Final Weight/Volume: 100 mL

Date Prepared: 11/17/2010 0920

% Rec. LCS LCSD **RPD** Analyte Limit RPD Limit LCS Qual LCSD Qual Aluminum 59 62 21.1 - 110 5 30 Chromium 80 80 50.1 - 110 30 1 93 97 22.6 - 146 30 Iron 5

Client: Olin Corporation Job Number: 360-31098-1

Post Digestion Spike - Batch: 360-65955

Method: 6010B Preparation: 3050B

Lab Sample ID: 360-31098-2
Client Matrix: Solid
Dilution: 1.0

Analysis Batch: 360-65997 Prep Batch: 360-65955 Units: mg/Kg Instrument ID: Varian ICP
Lab File ID: 111710c.csv
Initial Weight/Volume: 1.63 g
Final Weight/Volume: 100 mL

Date Analyzed: 11/17/2010 1907 Date Prepared: 11/17/2010 0920

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	3900	438	4200	61	75 - 125	W
Chromium	260	87.6	328	78	75 - 125	
Iron	12000	438	11800	NC	75 - 125	

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 360-65955

Method: 6010B Preparation: 3050B

MS Lab Sample ID: 360-31098-2
Client Matrix: Solid
Dilution: 1.0

Analysis Batch: 360-65997 Prep Batch: 360-65955 Instrument ID: Varian ICP
Lab File ID: 111710c.csv
Initial Weight/Volume: 1.65 g
Final Weight/Volume: 100 mL

Date Analyzed: 11/17/2010 1847 Date Prepared: 11/17/2010 0920

MSD Lab Sample ID: 360-31098-2 Client Matrix: Solid Dilution: 1.0

Date Analyzed: 11/17/2010 1854 Date Prepared: 11/17/2010 0920 Analysis Batch: 360-65997 Prep Batch: 360-65955 Instrument ID: Varian ICP
Lab File ID: 111710c.csv
Initial Weight/Volume: 1.65 g
Final Weight/Volume: 100 mL

% Rec.

Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Aluminum	250	184	75 - 125	6	35	4	4
Chromium	169	111	75 - 125	13	35	F	
Iron	-780	-777	75 - 125	0	35	4	4

Client: Olin Corporation Job Number: 360-31098-1

Serial Dilution - Batch: 360-65955 Method: 6010B Preparation: 3050B

Lab Sample ID: 360-31098-2 Analysis Batch: 360-65997 Instrument ID: Varian ICP

Client Matrix: Solid Prep Batch: 360-65955 Lab File ID: 111710c.csv

Dilution: 5.0 Units: mg/Kg Initial Weight/Volume: 1.63 g

Date Analyzed: 11/17/2010 1901 Final Weight/Volume: 100 mL

Date Analyzed: 11/17/2010 1901 Date Prepared: 11/17/2010 0920

Analyte	Sample Result/Qual	Result	%Diff	Limit	Qual
Aluminum	3900	3880	1.4	10	
Chromium	260	270	4.3	10	
Iron	12000	12200	1.3	10	

#### **State Accreditation Matrix**

			0(-1		::	
		New Hampshire	State where P	rimary Accreditat	Florida	North
Method Name	Description	(NELAC) prim.	Mass	Conn	(NELAC)	Carolina
821-R-02-012	Toxicity, Acute (48-Hour)(list upon request)	NP			NP	
SM 4500 CI F	Chlorine, Residual		NP			
SM 9215E	Heterotrophic Plate Count (SimPlate)		Р			
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP			
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P			
SM 9224	Coliforms, Total, and E.Coli (Enumeration)		Р			
1103.1	E.coli		ambient/			
Enterolert	Enterococcus	ND/D	source	ND/D		
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P	NP/P		
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P NP/SW	NP/P	NP/P		
6010B	Metals (ICP)(list upon request)		NP	NP/SW		
245.1	Mercury (CVAA)	NP/P NP	INP	NP/P NP		
7470A	Mercury (CVAA)	SW		SW		
7471A SM 2340B	Mercury (CVAA)  Total Hardness (as CaCO3) by calculation	NP/P	NP	NP/P		
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P	INF	NP/P		
3010A	Preparation, Total Metals	NP/P		NP/P		
3010A 3020A	Preparation, Total Metals  Preparation, Total Metals	NP/P/SW		NP/P/SW	1	1
3050B	Preparation, Metals	SW		SW		1
504.1	EDB, DBCP and 1,2,3-TCP (GC)	P	Р	P		
608	Organochlorine Pest/PCBs (list upon request)	NP	NP	NP		
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP	111	NP		1
3546	Microwave Extraction	SW				
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP		NP		
3540C	Soxhlet Extraction	SW				
3550B	Ultrasonic Extraction	SW		SW		
600/4-81-045	Polychlorinated Biphenyls (PCBs) (GC)		NP	NP		
8081A	Organochlorine Pesticides (GC)(list upon request)	NP/SW		NP/SW		
8082A	PCBs by Gas Chromatography(list upon request)	NP/SW		NP/SW		
8270C	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW		NP/SW		
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)			NP/SW		
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)			NP/SW		NP/SW
524.2	Volatile Org Comp (GC/MS)(list upon request)	Р	Р	Р		
524.2	Trihalomethane compounds	Р	Р	Р		
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP	NP		
5035	Closed System Purge and Trap	SW		SW		
5030B	Purge and Trap	NP		NP		
8260B	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW		NP/SW		
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)			NP/SW		NP/SW
180.1	Turbidity, Nephelometric	Р	Р	Р		
300	Anions, Ion Chromatography	NP/P	NP/P	NP/P		
410.4	COD	NP	NP	NP		
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW		SW		
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP	NP		
7196A	Chromium, Hexavalent	NP/SW		NP/SW		
9012A	Cyanide, Total and/or Amenable	NP/SW		NP/SW		
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP		NP		
9040B	pH	NP		NP		
9045C	pH	SW		SW		
L107041C	Nitrogen, Nitrate	NP	P	NP/P	ļ	1
L107-06-1B	Nitrogen Ammonia	NP	NP ND/D	NP/P		
L204001A CN	Cyanide, Total	P	NP/P	NP/P		
L210-001A	Phenolics, Total Recoverable	NP	NP ND/D	NP ND/D	ļ	1
SM 2320B	Alkalinity	NP/P	NP/P	NP/P		1
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P	NP/P	ļ	1
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P NP	NP/P NP	1	1
SM 2540D	Solids, Total Suspended (TSS)	NP ND	NP .		1	1
SM 3500 CR D	Chromium, Hexavalent	NP NB/B	ND/D	NP ND/D	1	1
SM 4500 H+ B	pH	NP/P	NP/P P	NP/P NP/P		
SM 4500 NO2 B	Nitrogen, Nitrite	NP NP/P	NP	NP/P NP/P		
SM 4500 P E	Phosphorus, Orthophosphate	NP/P NP	NP NP	NP/P NP		
SM 4500 P E SM 4500 S2 D	Phosphorus, Total Sulfide, Total	NP NP	INF	NP NP		
SM 4500 S2 D SM 5210B	BOD, 5-Day	NP NP	NP	NP NP		
		NP/P	NP NP	NP/P		1
SM 5310B	Organic Carbon, Total (TOC)	INF/F	INF	INF/F	<u> </u>	

Not all organic compounds are accreditied under NELAC

For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory The lab carries additional accreditations with several states. This is the laboratories typical listing but is subject to change based on the laboratories current certification standing.

# **Login Sample Receipt Check List**

Client: Olin Corporation Job Number: 360-31098-1

Login Number: 31098 List Source: TestAmerica Westfield

Creator: Beaumier, Janine E

List Number: 1

Question	T / F/ NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

TestAmerica Westfield
Westfield Executive Park 53 Southampton Road
Westfield, MA 01085

**Chain of Custody Record** 

Phone (413) 572-4000 Fax (413) 572-3707														bai a Palefa et, il senen savi sala.	5, 256,035,0	944 N. T. 1814 949	
Client Information	Shas ,	Marzolini	Ş.	Lab PM: Mason	jn, R Be	Lab PM: Mason, Becky C			Carr	Carrier Tracking No(s):	ng No(s):		ယ် ဂ	COC No: 360-10705.1			
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Company: Olin Corporation	•		,			(	A		Requested	sted			75	- (10位)	ジー	800	Ц
Address: 51 Eames street	Due Date Requested:				lá lásta	11/02/11						$\dashv$		Preservation Codes:	odes:	- 1.	
City: Willington Wilmington	TAT Requested (days):		<i>J</i>		tw hit of	and the second								A - HCL B - NaOH C - Zn Acetate	0 Z Z , , ,	M - Hexane N - None O - AsNaO2	
1687	Slavyer	ر ح	-										m O	D - Nitric Acid E - NaHSO4	φ.γ.: φ.γ.:	P- Na2O4S Q- Na2SO3	
Phone:	Po#: REWI0013				) Aktri	1 1900.00							0.70	F - MeOH G - Amchlor		R - Na2S2SO3 S - H2SO4	
Email:	# 0W					T. C. C. C.								J - DI Water		U - Acetone  V - MCAA	
ct Name: Annual Sediment	Project #: 36001816				_	efizičky tožio-								K-EDTA L-EDA	Z-0-5	W - ph 4-5 Z - other (specify)	
sie Olin Wilmindon MA	SSOW#:				_									Other:			
•				Matrix (w=water,	Fiftered S	B - Al/Cr/I							Number (				
Sample Identification	Sample Date	Time .	G=grab) BT=Tissue, A=A Preservation Code:	BT=Tissue, A=Air)	_	-							Tota	Special	Instruc	Special Instructions/Note:	
0c-sp-sp1 - 0.0/o.5	11/15/10	200	<u>د</u>	Solid	<u>₹</u> 2					_							
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oc-sp-sp3 - 0.0/0.5	11 15/10	1130	3	Solid	ΝN	×											
00-SD-SD4 - 0,0 0,5	11/15/10	100	6	Solid	NN	×											
oc-sp-sps - 0.0/0,5	11/15/10	1120	8	Solid	<u> </u>	×											
OC-5D-502-00/05 DV 11/11/10 1140	bs pup 11/11		₽ 	Solid	~	×											
OC-50-502-00/0,5 MS	"Instha"	1140	8	Solid	Z Y	×											
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